

CLAIMS

1. A plastics pipe which comprises an inner core and an outer removable skin layer bonded thereto,

the outer removable skin layer comprising a polymeric material, chosen for its physical and mechanical properties, and an adhesion-modifying additive,

the adhesion-modifying additive being present in the skin layer in an amount such that the adhesion of the skin layer to the inner core is sufficient to prevent substantial undesired relative movement between the skin layer and the core during installation, but insufficient to prevent the outer skin layer from being cleanly removed by peeling, at least at the ends of the pipe, and insufficient to cause a substantial reduction in the impact strength of the inner core.

2. A plastics pipe according to claim 1, wherein the strength of the adhesive bond between the skin layer and the inner core is from 0.2 N/mm to 2.0 N/mm, when measured by a rolling drum peel test as described in Appendix 1.

3. A plastics pipe according to claim 1 or 2, wherein the strength of the adhesive bond between the skin layer and the inner core is from 0.3 N/mm to 1.5 N/mm, when measured by a rolling drum peel test as described in Appendix 1.

4. A plastics pipe according to any one of the preceding claims, in which the strength of the adhesive bond between the skin layer and the inner core is such that the impact strength of the

composite pipe is at least 50%, preferably 75%, of the impact strength of the inner core without the skin layer.

5. A plastics pipe according to any one of the preceding claims, in which the inner core comprises polyethylene.
6. A plastics pipe according to any one of the preceding claims, wherein the skin layer comprises a propylene homo-or co-polymer, a propylene block co-polymer, or a propylene random copolymer.
7. A plastics pipe according to claim 6, wherein the skin layer comprises a propylene block co-polymer.
8. A plastics pipe according to any one of the preceding claims, in which the inner core comprises polyethylene and the skin layer comprises a propylene co-polymer and wherein the impact strength of the pipe is greater than 300 joules, when measured using the method of EN1411:1996 at a temperature of -10°C using a 90mm tup for impacting the pipe.
9. A plastics pipe according to any one of the preceding claims, wherein the skin layer comprises an adherent polymeric material and an appropriate amount of an adhesion-reducing additive.
10. A plastics pipe according to claim 9, wherein the adhesion-reducing additive in the skin layer is present in an amount of from 0.5% to 10% by weight.

11. A plastics pipe according to claim 9 or 10, wherein the adhesion reducing additive is an ester of a polyhydric alcohol.
12. A plastics pipe according to claim 11, wherein the polyhydric alcohol is glycerol.
13. A plastics pipe according to claim 11 or 12, wherein the ester is a fatty acid ester.
14. A plastics pipe according to claim 11 or 12, wherein the adhesion-reducing additive is glycerol mono-stearate.
15. A plastics pipe according to any one of the preceding claims, which comprises an inner core of polyethylene and a skin layer of a propylene block copolymer comprising from 2% to 4% of a glycerol ester.
16. A plastics pipe according to any one of claims 1 to 10, wherein the adhesion-reducing additive is a fatty acid amide.
17. A plastics pipe according to claim 16, wherein the fatty acid amide is stearamide or erucamide.
18. A plastics pipe according to claim 16, wherein the fatty acid amide is ethylene-bis-stearamide.
19. A plastics pipe according to any one of the preceding claims, wherein the skin layer has a thickness within the range of from 0.2 mm to 2.0 mm.

20. A plastics pipe according to any one of the preceding claims, wherein the ratio of the external diameter of the pipe to the thickness of the skin layer is from 100 to 800.
21. A plastics pipe according to any one of the preceding claims, wherein the strength (in N per mm of width) of the skin layer exceeds the peel strength (in N per mm width) of the adhesive bond between the outer removable skin layer and the inner core.
22. A plastics pipe substantially as hereinbefore described.
23. A method for the production of a plastics pipe comprising an inner core and an outer removable skin layer bonded thereto, the outer removable skin layer comprising a polymeric material chosen for its physical and mechanical properties, and an effective amount of an adhesion-modifying additive, which method comprises co-extruding molten polymeric materials forming the inner core and the outer removable skin layer from one or more extruder dies, bringing the molten polymeric materials together and allowing them to cool, such that, on cooling, the adhesion of the skin layer to the inner core is sufficient to prevent substantial undesired relative movement between the skin layer and the core during installation of the pipe, but insufficient to prevent the skin layer from being cleanly removed by peeling, at least at the ends of the pipe, and insufficient to cause a substantial reduction in the impact strength of the inner core.

24. A method according to claim 23, wherein the polymeric materials of the inner core and the outer removable skin layer are extruded simultaneously and brought together whilst still molten.
25. A method according to claim 23 or 24, substantially as described in the Examples.
26. A method of making a joint to a plastics pipe according to any one of claims 1 to 22, or of joining two such plastics pipes, which comprises peeling the skin layer from the region or regions of the pipe to be joined, to expose a clean surface suitable for electrofusion jointing, installing an electrofusion fitting over the clean surface or surfaces of the pipe or pipes and activating the electrofusion fitting to fuse the region or regions of the pipe or pipes thereto.